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# TRANSMITTAL LETTER

## RESPONSE TO NON COMPLIANT APPEAL BRIEF

| | | |
|---|---|---|
| Applicant | : | Sanjeev K. Sharma |
| App. No | : | 10/808,174 |
| Filed | : | March 23, 2004 |
| For | : | METHOD AND SYSTEM FOR LOAD BALANCING IN A WIRELESS COMMUNICATION SYSTEM |
| Examiner | : | Emem Ekong |
| Art Unit | : | 2688 |

CERTIFICATE OF MAILING

I hereby certify that this correspondence and all marked attachments are being deposited with the United States Postal Service as first-class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

May 18, 2007
(Date)

John M. Carson, Reg. No. 34,303

**Mail Stop Appeal Brief - Patents**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the Notification of Non-Compliant Appeal Brief, dated May 4, 2007, transmitted herewith for filing in the above-identified application are the following enclosures:

(X) Amended Appeal Brief in 24 pages. (At the end of the "Status of the Claims" section, "Claims 1-27 are being appealed" has been added. The remaining portion is the same.)

(X) Return prepaid postcard.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Dated: May 18, 2007

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Attorney of Record
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SAMINF.001A PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

| | | |
|---|---|---|
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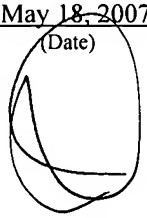

John M. Carson, Reg. No. 34,303

**ON APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES**
**APPEAL BRIEF**

Mail Stop Appeal Brief -- Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief relates to an appeal to the Board of Patent Appeals and Interferences of the final rejection set forth in a final Office Action mailed May 9, 2006 in the above-captioned application.

**TABLE OF CONTENTS**

## I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Samsung Electronics, which is the assignee of the patent application.

## II. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any related appeals or interferences.

## III. STATUS OF THE CLAIMS

The application was originally filed with Claims 1-23 on March 23, 2004. In response to a first Office Action mailed on November 16, 2005, Claims 9-11, 14 and 17 were amended, and Claims 24-27 were added. In a second and final Office Action mailed on May 9, 2006, the Examiner finally rejected Claims 1-27. Claims 1-27 are being appealed.

## IV. STATUS OF AMENDMENTS

The Examiner did not object to the above-indicated claim amendments. Thus, Claims 1-27 are pending and appear before the Board as they were finally rejected, and the claims are attached hereto as Appendix A.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

As described in the application as filed, in one embodiment of the invention, an access point (or access node) acts as a local and centralized server which makes its own decision on load balancing, and thus a system according to one embodiment does not require extra hardware equipment such as a wireless switch, or an external server, or additional software such as management software. *See Application at para. [0027].*

Claim 1 recites a method of load balancing in a terrestrial wireless communication system including an access node. The method comprises communicating data wirelessly between the access node and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access node form a wireless local area network. *See Application at para. [0029]; Figure 2.* The method also comprises determining, at the access node, an overloaded channel from the plurality of channels. *See Application at para. [0033].* The method further comprises transferring, at the access node, a load from the overloaded channel to a less loaded channel of the plurality of channels. *See Application at para. [0035].*

Claim 9 recites a method of load balancing in a terrestrial wireless communication system including an access point. The method comprises providing a plurality of channels between the access point and a plurality of terminals such that the access point is in data communication with the plurality of terminals via the plurality of channels. *See Application at para. [0029]; Figure 2.* The method also comprises determining an overloaded channel from the plurality of channels based on at least one of: the number of packets pending in each of the channels and bandwidths which are currently being used in each of the channels. *See Application at para. [0033].* The method further comprises selecting a link from a plurality of links in the overloaded channel. *See Application at para. [0034].* Additionally, the method comprises transferring the selected link to a less loaded channel of the plurality of channels based on at least one of: the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel. *See Application at para. [0035].*

Claim 10 recites a method of load balancing in a terrestrial wireless communication system including an access point. The method comprises communicating data between the access point and a plurality of terminals via a plurality of channels. *See Application at para. [0029]; Figure 2.* The method also comprises calculating loads of each of the plurality of channels based on at least one of: the number of packets pending in each of the channels and bandwidths which are currently being used in each of the channels. *See Application at para. [0049]; Figure 5.* The method further comprises determining an overloaded channel from the plurality of channels based on the calculated loads. *See Application at paras. [0033] and [0049] ; Figure 5.* Additionally, the method comprises selecting a link from a plurality of links in the

overloaded channel. *See Application at para. [0053]; Figure 5.* The method further comprises selecting a new channel, to which the selected link is transferred, from the plurality of channels, wherein the new channel is less loaded than the overloaded channel. *See Application at para. [0054]; Figure 5.* Additionally, the method comprises determining the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the new channel. *See Application at paras. [0054] and [0057]; Figure 5.* The method also comprises transferring the selected link to the new channel in case the determined RSSI value is equal to or greater than that of the selected link or greater than a predefined threshold RSSI value, and in case the quality of service level required for the selected link is met in the new channel. *See Application at para. [0059]; Figure 5.*

Claim 11 recites an apparatus for load balancing in a communication system including an access point. The apparatus comprises a control module configured to i) communicate data wirelessly between the access point and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access point form a wireless local area network, ii) determine an overloaded channel from the plurality of channels, iii) select a link from a plurality of links in the overloaded channel, and iv) transfer the selected link to a less loaded channel of the plurality of channels. *See Application at paras. [0029], [0033], [0034] and [0035]; Figures 2 and 3.* The apparatus also comprises a memory, in data communication with the control module, configured to store information to be used for the control module performing the load balancing. *See Application at para. [0036]; Figure 3.*

Claim 17 recites a system for load balancing in a wireless communication system including at least one access node, each access node employing a plurality of channels, wherein each access node is configured to determine a load imbalance based on at least one of the number of packets pending in each of the plurality of channels and bandwidths which are currently being used in each of the plurality of channels, and wherein if there is an overloaded channel, the access node is configured to select a link from a plurality of links in an overloaded channel, and transfer the selected link to a less loaded channel based on at least one of the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel. *See Application at paras. [0029], [0033], [0033] and [0035].*

Claim 18 recites a system for load balancing in a terrestrial wireless communication system including an access node. The system comprises means for communicating data wirelessly between the access node and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access node form a wireless local area network. *See Application at para. [0029]; Figure 2.* The system also comprises means for determining, at the access node, an overloaded channel from the plurality of channels. *See Application at para. [0033].* The system further comprises means for transferring, at the access node, a load from the overloaded channel to a less loaded channel of the plurality of channels. *See Application at para. [0035].*

Claim 23 recites a computer readable medium storing a program which performs a method of load balancing in a terrestrial wireless communication system including an access node. The method comprises communicating data wirelessly between the access node and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access node form a wireless local area network. *See Application at para. [0029]; Figure 2.* The method also comprises determining, at the access node, an overloaded channel from the plurality of channels. *See Application at para. [0033].* The method further comprises transferring, at the access node, a load from the overloaded channel to a less loaded channel of the plurality of channels. *See Application at para. [0035].*

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

This Appeal turns on the following issues:

Claims 1, 7, 12, 18 and 23 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Minnick et, al (U.S. Patent No. 6,950,658),

Claims 2-6, 9-11, 14-17, 19-22 and 24-27 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over Minnick in view of Frank (U.S. Publication No. 2004/0052226),

Claim 8 stands rejected under 35 U.S.C. § 103 (a) as being unpatentable over Minnick in view of Razavilar (U.S. Publication No. 2003/0181211), and

Claim 13 stands rejected under 35 U.S.C. § 103 (a) as being unpatentable over Minnick in view of Gandhi (U.S. Publication No. 2005/0026624).

## VII. APPELLANT'S ARGUMENT

### A. Claims 1, 7, 18 and 23 are patentable over Minnick.

#### i) The Examiner's Grounds for Rejection

The Examiner asserted regarding Claims 1, 18 and 23 that Minnick discloses a method, system and computer readable medium of load balancing in a terrestrial wireless communication system including an access node (col. 1 lines 11-15. and col. 6 lines 37-49, a multiple channel controller that balances load), the method comprising: means (multi-channel controller) for communicating data wirelessly between the access node and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access node form a wireless local area network (see Figure 1; col. 2 lines 15-22, col. 2 lines 40-49, col. 4 lines 2-15, col. 4 lines 61-66, col. 5 lines 42-51, and col. 5 line 62-col. 6 line 4, the multi-channel communication system includes multiple mobile units, several tower sites, a multi-channel controller, and several dispatch agencies), means for determining (col. 12 line 6-8, load service) at the access node, an overloaded channel from the plurality of channels; and means for transferring (load service, col. 12 line 6-8), at the access node, a load from the overloaded channel to a less loaded channel of

the plurality of channels (col. 2 line 40-col. 3 line 2, and col. 6 lines 35-52, the multi-channel controller determines TDMA channel loading and hands off selected mobile units from one channel to another when loading on a channel becomes excessive). *Final Office Action at page 3, fourth paragraph.*

In the "Response to Arguments" section of the final Office Action, the Examiner asserted the following. In response to Applicant's arguments that Minnick fails to determine an overloaded channel from the plurality of channels and transfer a load from the overloaded channel to a less loaded channel of the plurality of channels is not persuasive for the reason that Minnick performs passive balancing for the balancing of the loading of mobile units as they come onto the network. During normal operation the load service looks at the loading of the channel as mobile units are placed there by the RNC/TDMA service, via the AddNotification_Msg through the channel loading monitor function. When an overload condition is reached the load service will determine if there is an alternate channel at the current tower site 120 or 170 that has a better loading metric. If another channel is available the load service generates a CommandChange_Msg. This message is sent to the mobile unit 110 to command it to the new channel (col. 12 lines 1-14), therefore Minnick discloses applicant's limitation of "determine an overloaded channel from the plurality of channels and transfers a load from the overloaded channel to a less loaded channel of the plurality of channels." Therefore, the argued limitations are the same as disclosed by the reference or the limitations are written broad such that they read on the cited art, rejections, are maintained as repeated below.

**ii) <u>The Legal Standard</u>**

"For a prior art reference to anticipate a claim under 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.ed 675, 677, 7 USPQ 2d 1315, 1317 (Fed. Cir. 1988).

**iii) Minnick Does Not Disclose the Features of Each of Pending Claims 1, 7, 18 and 23 (Appellant provided patentability arguments of Claim 12, which depends from Claim 11, in the "35 U.S.C. § 103 rejection" discussion section since Claim 11 has not been rejected by Minnick under 35 U.S.C. § 102)**

Discussion of Patentability of Independent Claims 1, 18 and 23

Independent Claim 1 recites, among other things, i) determining, *at the access node*, an overloaded channel from the plurality of channels and ii) transferring, *at the access node*, a load from the overloaded channel to a less loaded channel of the plurality of channels. Each of Claims 18 and 23 includes similar features. Minnick does not disclose the above-indicated features of the claimed invention as discussed below.

Minnick discloses that tower sites (170, 190), arguably corresponding to the claimed access node, wirelessly communicate data with mobile terminals (110) via channels. *See Figure 1 of Minnick.* Furthermore, a multichannel controller (MCC; 130) determines an overloaded channel and performs load balancing based on the information (such as channel loading or message statistics) that the tower sites (170, 190) have provided. *See column 10, lines 44-46 and column 13, lines 1-4.* That is, in Minnick, neither of the tower sites (170, 190) determines an overloaded channel from the plurality of channels. Furthermore, neither of the tower sites (170, 190) transfers a load from the overloaded channel to a less loaded channel of the plurality of channels. Thus, Appellant respectfully submits that Minnick does not disclose or teach the above-indicated features of the claimed invention.

In one embodiment of the claimed invention, the access node acts as a local and centralized server which makes its own decision on load balancing, and thus one embodiment of the claimed invention does not require extra hardware equipment such as a wireless switch, or an external server, or additional software such as management software. *See, for example, paragraph [0027].* In contrast, the Minnick system is required to have additional hardware such as the MCC (130) since each tower site (170, 190) does not locally perform load balancing. In view of the above, independent Claims 1, 18 and 23 are allowable over Minnick.

With respect to the Examiner's response to Applicant's arguments described above, Appellant respectfully disagrees. In the previous response, Appellant argued that Minnick does not disclose i) determining, at the access node, an overloaded channel from the plurality of channels and ii) transferring, at the access node, a load from the overloaded channel to a less loaded channel of the plurality of channels. That is, Appellant argued that in Minnick, the determining and transferring of an overloaded channel is not performed at the tower sites (170, 190), arguably corresponding to the claimed access node. However, the Examiner did not address the above arguments and merely stated that Minnick discloses applicant's limitation of "determine an overloaded channel from the plurality of channels and transfers a load from the overloaded channel to a less loaded channel of the plurality of channels" which does not consider the access node associated feature.

Discussion of Patentability of Dependent Claim

Claim 7 depends from base Claim 1, and further defines additional technical features of the present invention. In view of the patentability of the base claim, and in further view of the additional technical features, Appellant respectfully submits that the dependent claim is patentable over Minnick.

**B. Claims 2-6, 9-12, 14-17, 19-22 and 24-27 are patentable over Minnick and Frank, Claim 8 is patentable over Minnick and Razavilar and Claim 13 is patentable over Minnick and Gandhi.**

**i) The Examiner's Grounds for Rejection**

Claim 9

Regarding Claim 9, the Examiner asserted the following. Minnick discloses a method of load balancing in a wireless communication system including an access point (col. 1 lines 11-15. and col. 6 lines 37-49, a multiple channel controller that balances load). Minnick discloses

providing a plurality of channels between the access point and a plurality of terminals such that the access point is in data communication with the plurality of terminals via the plurality of channels (col. 2 lines 15-22, col. 2 lines 40-49, and col. 4 lines 2-15). Minnick discloses determining an overloaded channel from "the plurality of channels based on at least one of: the number of packets pending in each of the channels (see figure 5, col. 6 lines 41-44, and col. 9 line 63-col. 10 line 19).

The Examiner continued to assert that however, Minnick fails to disclose calculating based on bandwidths which are currently being used in each of the channels; and selecting a link from the overloaded channel; and selecting a link from the overloaded channel; and transferring the selected link to a less loaded channel of the plurality of channels based on at least one of: the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel. Frank discloses calculating based on bandwidths which are currently being used in each of the channels (pars. 0048, 0051, and 0052, bandwidth information are utilized for bandwidth and load management). Frank discloses transferring the selected link to a less loaded channel of the plurality of channels based on at least one of: the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel (pars. 0085-0088, Qos and load balancing controller use Qos and signal strength parameter information for load balancing). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Minnick, by calculating based on bandwidths which are currently being used in each of the channels and selecting a link from the overloaded channel; and transferring the selected link to a less loaded channel of the plurality of channels based on at least one of: the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel as taught by Frank for the purpose of maximizing data rate.

Claims 10 and 17

Regarding Claims 10 and 17, the Examiner asserted the following. Minnick discloses a method and system of load balancing in a wireless communication system including an access point, the method comprising: communicating data between the access point and a plurality of terminals via a plurality of channels (col. 1 lines 11-15, col. 6 lines 37-49, col. 2 lines 15-22, col.

2 lines 40-49, and col. 4 lines 2-15). Minnick discloses calculating loads of each of the plurality of channels based on at least one of: the number of packets pending in each of the channels (see figure 5, col. 6 lines 41-44, and col. 9 line 63-col. 10 line 19, and col. 11 lines 4-13); and determining an overloaded channel from the plurality of channels based on the calculated loads (col. 11 lines 4-13, and col. 11 lines 56-62). Minnick discloses selecting a link from a plurality of links in the overloaded channel; selecting a new channel, to which the selected link is transferred, from the plurality of channels, wherein the new channel is less loaded than the overloaded channel (col. 11 line 56 - col. 12 line 35).

The Examiner continued to assert that however, Minnick fails to specifically disclose calculating based bandwidths which are currently being used in each of the channels; and determining the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the new channel; and transferring the selected link to the new channel in case the determined RSSI value is equal to or greater, than that of the selected link or greater than a predefined threshold RSSI value, and in case the quality of service level required for the selected link is met in the new channel. Frank discloses calculating based bandwidths which are currently being used in each of the channels (pars. 0048, 0051, and 0052). Frank discloses determining the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel (pars. 0085-0088, Qos and load balancing controller use Qos and signal strength parameter information for load balancing). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Minnick, by calculating based bandwidths which are currently being used in each of the channels and determining the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the new channel; and transferring the selected link to the new channel in case the determined RSSI value is equal to or greater than that of the selected link or greater than a predefined threshold RSSI value, and in case the quality of service level required for the selected link is met in the new channel as taught by Frank for the purpose of maximizing signal throughput.

Claim 11

Regarding Claim 11, the Examiner asserted the following. Minnick discloses an apparatus for load balancing in a communication system including an access point, comprising: a control module (see figures 2 and 3, and col. 7 line 11-67, multi-agency router) configured to communicate data wirelessly between the access point and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access point form a wireless local area network, determine an overloaded channel from the plurality of channels (col. 1 lines 11-15, col. 6 lines 37-49, col. 2 lines 15-22, col. 2 lines 40-49, and col. 4 lines 2-15); and a memory (multi-channel controller database), in data communication with the control module, configured to store information to be used for the control module performing the load balancing (see figure 3, and col. 7 line 67-col. 8 line 2). However, Minnick fails to specifically disclose select a link from a plurality of links in the overloaded channel and transfer the selected link to a less loaded channel of the plurality of channels. Frank discloses select a link from a plurality of links in the overloaded channel and transfer the selected link to a less loaded channel of the plurality of channels (pars. 0085-0086). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Minnick, by selecting a link from a plurality of links in the overloaded channel and transfer the selected link to a less loaded channel of the plurality of channels as taught by Frank for the purpose of maximizing data rate.

Claim 8

Regarding Claim 8, the Examiner asserted the following. Minnick discloses the method of claim 1, wherein the access node includes a plurality of access nodes (see Figure 1). However, Minnick fails to disclose each access node performs the determining and transferring independently from each other. Razavilar discloses each access node performs the determining and transferring independently from each other (pars. 0107, and 0108, signal strength measurements are utilized for establishing channel metrics and ranking the available channels so that a given AP can decide which is the best available, channel to utilize). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Minnick, and have each access node performs the determining and transferring

independently from each other as taught by Razavilar for the purpose of each access point compare and chose channels independently based of channel calculated metric.

Claim 13

Regarding Claim 13, the Examiner asserted the following. Minnick discloses the apparatus of claim 11, and multi-channel controller, however, Minnick fails to specifically disclose wherein the access point comprises a multi channel medium access control (MC-MAC) based access point. Gandhi discloses MAC access point (see par. 0055). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Minnick, and have the access point comprise a multi channel medium access control (MC-MAC) as taught by Gandhi for the purpose of using an access point with multi channel medium access control.

**ii) The Legal Standard**

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and the prior art references, when combined, must teach or suggest all the claim limitations. M.P.E.P. § 2143 (emphasis added). Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

**iii) Discussion of Patentability of Independent Claims**

Discussion of Patentability of Independent Claims 9-11 and 17

Independent Claim 9 recites, among other things, selecting *a link* from a plurality of *links* in the overloaded channel and transferring the selected *link* to a less loaded channel of the plurality of channels. Each of Claims 10-11 and 17 includes similar features. Appellant respectfully submits that there is no disclosure in Minnick that the multichannel controller (130)

selects a link from a plurality of links in the overloaded channel and transfers the selected link to a less loaded channel. As discussed above, in Minnick, the multichannel controller (130) determines an overloaded channel and performs load balancing on the overloaded channel. *See column 10, lines 44-46 and column 13, lines 1-4.*

The Examiner asserts in connection with Claims 10 and 17 that Minnick teaches "selecting a link from the overloaded Channel," citing column 11, line 56 through column 12, line 35 of Minnick. *Final Office Action at page 9, fourth paragraph.* Appellant respectfully disagrees. Those cited portions of Minnick merely and arguably disclose "selecting an overloaded channel from a plurality of channels." Appellant respectfully submits that they do not provide evidence of "selecting a link from a plurality of links in the overloaded channel" recited in Claims 9-11 and 17. Furthermore, the Examiner acknowledged in connection with Claim 11 that Minnick fails to teach selecting a link from a plurality of links in the overloaded channel and transferring the selected link to a less loaded channel of the plurality of channels. *Final Office Action at page11, second paragraph.*

However, the Examiner further asserts that Frank teaches "selecting a link from a plurality of links in the overloaded channel and transferring the selected link to a less loaded channel of the plurality of channels," citing paragraphs [0085]-[0088] of Frank. *Final Office Action at page11, third paragraph.* Appellant respectfully disagrees. Those cited paragraphs of Frank merely disclose that a load balancing manager determines information for load balancing and provides the determined information to access points (312-320) and access devices (322-338). *See paragraph [0086] and Figure 3.* Appellant further respectfully submits that they do not provide evidence of "transferring the selected link to a less loaded channel of the plurality of channels" recited in Claims 9-11 and 17. In view of the above, Appellant respectfully submits that the combination of Minnick and Frank does not teach the above-indicated features of the claimed invention, and thus independent Claims 9-11 and 17 are allowable over the prior art references.

Discussion of Patentability of Claims 8 and 13

Claims 8 and 13 depend from base Claim 1 and 11, respectively, and further define additional technical features of the present invention. Claim 8 was rejected by Minnick and Razavilar, and Claim 13 was rejected by Minnick and Gandhi. Razavilar discloses that an access point (AP1, AP2) selects a channel, which has least interference, among available channels based on received signal strength indication (RSSI) measurements. *See paragraphs [0042] and [0045].* Gandhi discloses that a base station performs a faster or slower control of a channel traffic based on the load of the channel. *See paragraphs [0042] and [0044].* Neither Razavilar nor Gandhi discloses load balancing. Thus, neither of Razavilar and Gandhi remedies the deficiency of Minnick. Furthermore, since Razavilar does not teach load balancing, the prior reference cannot, and does not, teach that each access node performs the determining and transferring independently from each other recited in Claim 8. In view of the patentability of base claim 1, and in further view of the additional technical features, Appellant respectfully submits that Claim 8 is patentable over Minnick and Razavilar. Furthermore, since at least base Claim 11 is patentable over Minnick, Appellant respectfully submits that Claim 13 is patentable over Minnick and Gandhi.

Discussion of Patentability of Dependent Claims

Claims 2-6, 12, 14-16, 19-22 and 24-27 depend from base Claim 1, 10, 11, 17 or 18, and further define additional technical features of the present invention. Particularly, each of Claims 24-27 includes all of the features of Claim 1, 10-11 and 17, respectively, and further includes that each channel includes a plurality of links. In view of the patentability of their base claims, and in further view of their additional technical features, Appellant respectfully submits that the dependent claims are patentable over the prior art of record.

**C. Conclusion**

In view of the foregoing arguments, Appellant respectfully submits that Claims 1-27 are patentable over the prior art of record.

## APPENDICES

Attached hereto as Appendix A is a copy of finally rejected Claims 1-27 in the present case. Also attached is Appendix B for inclusion of evidence and indicating no evidence is included, and Appendix C for inclusion of information regarding related proceedings and indicating no information regarding related proceedings is included. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 5/18/07

By: _____

John M. Carson
Registration No. 34,303
Attorney of Record
Customer No. 20,995
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## APPENDIX A: CLAIMS
(Claims as finally rejected)

1. A method of load balancing in a terrestrial wireless communication system including an access node, the method comprising:

communicating data wirelessly between the access node and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access node form a wireless local area network;

determining, at the access node, an overloaded channel from the plurality of channels; and

transferring, at the access node, a load from the overloaded channel to a less loaded channel of the plurality of channels.

2. The method of Claim 1, wherein the determining comprises:

calculating loads of each of the plurality of channels based on at least one of: the number of packets pending in each of the channels and bandwidths which are currently being used in each of the channels;

determining the overloaded channel from the plurality of channels based on the calculated loads; and

selecting a link from the overloaded channel.

3. The method of Claim 2, wherein the transferring is performed in case the quality of service level required for the selected link is met in the less loaded channel.

4. The method of Claim 2, wherein the transferring comprises swapping the selected link of the overloaded channel with a link of the less loaded channel.

5. The method of Claim 2, wherein the selecting comprises selecting the least loaded link from the overloaded channel.

6. The method of Claim 2, further comprising determining a received signal strength indication (RSSI) value in the less loaded channel and wherein the transferring is performed if the determined RSSI value is equal to or greater than that of the RSSI value of the selected link, or greater than a threshold RSSI value.

7. The method of Claim 1, wherein the wireless communication system comprises one of the following: a IEEE 802.11a/11b/11g network, a wireless local area network (WLAN), a wireless personal area network (WPAN), a general packet radio service (GPRS) network, a global system for mobile communication (GSM) network, a code division multiple access (CDMA) network or a Bluetooth network.

8. The method of Claim 1, wherein the access node includes a plurality of access nodes, and wherein each access node performs the determining and transferring independently from each other.

9. A method of load balancing in a wireless communication system including an access point, the method comprising:

providing a plurality of channels between the access point and a plurality of terminals such that the access point is in data communication with the plurality of terminals via the plurality of channels;

determining an overloaded channel from the plurality of channels based on at least one of: the number of packets pending in each of the channels and bandwidths which are currently being used in each of the channels;

selecting a link from a plurality of links in the overloaded channel; and

transferring the selected link to a less loaded channel of the plurality of channels based on at least one of: the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel.

10. A method of load balancing in a wireless communication system including an access point, the method comprising:

communicating data between the access point and a plurality of terminals via a plurality of channels;

calculating loads of each of the plurality of channels based on at least one of: the number of packets pending in each of the channels and bandwidths which are currently being used in each of the channels;

determining an overloaded channel from the plurality of channels based on the calculated loads;

selecting a link from a plurality of links in the overloaded channel;

selecting a new channel, to which the selected link is transferred, from the plurality of channels, wherein the new channel is less loaded than the overloaded channel;

determining the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the new channel; and

transferring the selected link to the new channel in case the determined RSSI value is equal to or greater than that of the selected link or greater than a predefined threshold RSSI value, and in case the quality of service level required for the selected link is met in the new channel.

11. An apparatus for load balancing in a communication system including an access point, comprising:

a control module configured to i) communicate data wirelessly between the access point and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access point form a wireless local area network, ii) determine an overloaded channel from the plurality of channels, iii) select a link from a plurality of links in the overloaded channel, and iv) transfer the selected link to a less loaded channel of the plurality of channels; and

a memory, in data communication with the control module, configured to store information to be used for the control module performing the load balancing.

12. The apparatus of Claim 11, wherein the control module and the memory are embedded in the access point.

13. The apparatus of Claim 11, wherein the access point comprises a multi channel medium access control (MC-MAC) based access point.

14. The apparatus of Claim 11, wherein the control module is further configured to calculate loads of each of the plurality of channels based on at least one of: the number of packets pending in each of the channels and bandwidths which are currently being used in each of the channels.

15. The apparatus of Claim 14, wherein the control module is further configured to transfer the load in case the quality of service level required for the selected link is met in the less loaded channel.

16. The apparatus of Claim 14, wherein the control module is further configured to determine a received signal strength indication (RSSI) value in the less loaded channel and to transfer the load if the determined RSSI value is equal to or greater than that of the RSSI value of the selected link, or greater than a predefined threshold RSSI value.

17. A system for load balancing in a wireless communication system including at least one access node, each access node employing a plurality of channels, wherein each access node is configured to determine a load imbalance based on at least one of the number of packets pending in each of the plurality of channels and bandwidths which are currently being used in each of the plurality of channels, and wherein if there is an overloaded channel, the access node is configured to select a link from a plurality of links in an overloaded channel, and transfer the selected link to a less loaded channel based on at least one of the quality of service level required for the selected link and a received signal strength indication (RSSI) value in the less loaded channel.

18. A system for load balancing in a terrestrial wireless communication system including an access node, comprising:

means for communicating data wirelessly between the access node and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access node form a wireless local area network;

means for determining, at the access node, an overloaded channel from the plurality of channels; and

means for transferring, at the access node, a load from the overloaded channel to a less loaded channel of the plurality of channels.

19. The system of Claim 18, wherein the determining means comprises:

means for calculating loads of each of the plurality of channels based on at least one of: the number of packets pending in the each of channels and bandwidths which are currently being used in each of the channels;

means for determining the overloaded channel from the plurality of channels based on the calculated loads; and

means for selecting a link from the overloaded channel.

20. The system of Claim 19, wherein the transferring means is configured to transfer the load in case the quality of service level required for the selected link is met in the less loaded channel.

21. The system of Claim 19, wherein the selecting means is configured to select the least loaded link from the overloaded channel.

22. The system of Claim 19, further comprising means for determining a received signal strength indication (RSSI) value in the less loaded channel and wherein the transferring means is configured to transfer the load if the determined RSSI value is equal to or greater than that of the RSSI value of the selected link, or greater than a threshold RSSI value.

23. A computer readable medium storing a program which performs a method of load balancing in a terrestrial wireless communication system including an access node, the method comprising:

communicating data wirelessly between the access node and a plurality of terminals via a plurality of channels, wherein the plurality of terminals and the access code form a wireless local area network;

determining, at the access node, an overloaded channel from the plurality of channels; and

transferring, at the access node, a load from the overloaded channel to a less loaded channel of the plurality of channels.

24. The method of Claim 9, wherein each channel includes a plurality of links.

25. The method of Claim 10, wherein each channel includes a plurality of links.

26. The apparatus of Claim 11, wherein each channel includes a plurality of links.

27. The system of Claim 17, wherein each channel includes a plurality of links.

## APPENDIX B: EVIDENCE

None

## APPENDIX C: RELATED PROCEEDINGS

None

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